

## VARIABLE FLUIDIC WAVEGUIDE ATTENUATOR

### ABSTRACT

A waveguide attenuator apparatus (100) includes a variable waveguide  
5 attenuator (102) having at least one waveguide attenuator cavity (109) and a  
fluidic dielectric (108) having a loss tangent, a permittivity and a permeability at  
least partially disposed within the waveguide attenuator cavity. At least one  
composition processor (101) is included and adapted for dynamically changing a  
composition or volume of the fluidic dielectric to vary the loss tangent, the  
10 permittivity and/or the permeability. A controller (136) is provided for controlling  
the composition processor to selectively vary the loss tangent, the permittivity  
and/or the permeability in response to a waveguide attenuator control signal (137).  
In one arrangement, the permittivity and permeability can be varied concurrently.